PULSE OF THE SOLAR SYSTEM : John Peter Grubert

Introduction

This paper introduces a slightly modified version of Newton's gravitational law which enables a commonality to be made between the forces of electrostatics and gravitation. These equations plus Hubble's constant and Heisenberg's uncertainty principle then allows the gravitational frequency or pulse of the Universe and Solar System to be calculated.

Galactic gravitational waves

Gravitational waves are ripples in space-time which unlike electromagnetic waves oscillate in two directions (polarizations) simultaneously, up/down and left/right for the plus (+) polarization and at 45-degree diagonals for the cross (x) polarization. They also travel at the speed of light just like electromagnetic waves, decay as they propagate, but can travel unimpeded through material that absorbs all forms of electromagnetic radiation. However, unlike electromagnetic waves that can be detected and measured, gravitational waves have to date never been directly detected. This paper sets out to prove that there is a galactic gravitational pulse in space that varies within the Solar System between 1.5 Hz and 1.8 Hz, being largest near large masses such as the Sun, Jupiter and Saturn, but affects the gravitational mass of every object in space.

Electrostatic and gravitational forces

The similarity between the Coulomb law for the interaction of point charges and that of the gravitational law suggests that both should have a common form, with a common dimensionless constant ξ. The electrostatic force F_e between charges and the gravitational force F_g between masses are calculated with Eqs. 1 and 2 respectively:

$F_e = q_1 q_2 / 4 \pi \varepsilon_0 r^2$ (1) $F_g = G m_1 m_2 / r^2$ (2)

However, these equations should be written as:

$F_e = \xi q_1 \nu e_1 q_2 \nu e_2 / r^2$ (3) $F_g = \xi m_1 \nu_{g1} m_2 \nu_{g2} / \rho r^2$ (4)

where G = Newton's gravitational constant = $6.67 \times 10^{-11} m^3/kg.s^2$, ε_0 = permittivity of free space = 8.85×10^{-12} in SI units, q_1 and q_2 = charges in Coulombs, ρ = gravitational density of space, ν_{g1} and ν_{g2} = gravitational frequencies of space (Hz).

From Eqs. 1 and 3: $\xi = 1 / (4 \pi \varepsilon_0 \nu e_1 \nu e_2)$ (5)

Frequencies $\nu e_{1,2}$ can be shown from the values of F_e/F_g and q/m for the proton to be the total energy frequencies of a proton = 2.269×10^{23}Hz. The value of our newly defined electrostatic/gravitational constant ξ can now be computed since from Eq. 5: $\xi = 1 / (4 \pi \varepsilon_0 \nu e_1 \nu e_2) = [4 \times 3.142 \times 8.85 \times 10^{-12} \times (2.269 \times 10^{23})^2]^{-1} = 1.75 \times 10^{-37}$. For a Hubble constant of 55, since the universe is flat its density is critical, hence $\rho = 5.7 \times 10^{-27}$ kg/m^3, and ν_g = 1.47 Hz in deep space.

Quantum orbits

For a satellite to be in an orbit close to its planet it is necessary for that satellite to occupy a stable orbit created by the planet's gravitational radiation. This is because the parent planet and the satellite both emit and receive gravitational waves at the same frequency (ν_g), created due to interaction with the galactic gravitational waves, and so quantum orbits or resonances are produced. The position of the quantum orbits can be calculated using Heisenberg's uncertainty principle applied to gravitational field particles of frequency ν_g in de Broglie waves around the planet. The uncertainty principle states that a particle whose "localized" wave or wave packet is made up of many different wavelengths (and hence many different momentums) will be confined to a very small region and form a pulse. From the uncertainty principle the gravitational frequency of a satellite is: $\nu_g = n c / 8 \pi^2 r$ (6)

The only planets in the solar system with satellites close enough to give small quantum numbers are Mars and Pluto. Mars has two moons one Phobos at a mean distance of 9.382×10^6 m from its center, and the other Deimos at 2.346×10^7 m. If it is assumed that Phobos is in quantum orbit n = 4, and Deimos in quantum orbit n = 10, then it follows from Eq. 6 that for Phobos: $\nu_g = 4 \times 2.998 \times 10^8 / (8 \times 3.142^2 \times 9.382 \times 10^6) = 1.619$ Hz, and for Deimos: $\nu_g = 10 \times 2.998 \times 10^8 / (8 \times 3.142^2 \times 2.346 \times 10^7) = 1.619$ Hz, where c = speed of light = 2.998×10^8 m/s. Pluto has one moon called Charon at a mean distance of 1.964×10^7 m from its center, and if it is assumed that Charon is in quantum orbit n = 8, then from Eq. 6 for Charon: $\nu_g = 8 \times 2.998 \times 10^8 / (8 \times 3.142^2 \times 1.964 \times 10^7) = 1.547$ Hz. These results give the gravitational frequencies at the moons, the planet's gravitational frequency will be slightly greater, but suggest that the gravitational frequency of space varies within the Solar System.

Planetary Orbits

Since the planets move in stable orbits around the Sun, the velocity of a planet creates a Doppler shift in the gravitational frequency of space (ν_g), which locally "transforms away" the gravitational field. The planets own gravitational frequency is given by this Doppler shift which is: $\Delta\nu = \nu_g u / c$ (7)

where $\Delta\nu$ = gravitational frequency of the planet, ν_g = gravitational frequency of space, and u = velocity of planet.

Jupiter is a large planet, and like Saturn has a density that allows it to vibrate elastically. Jupiter, and Saturn respectively emit 1.7, and 1.8 times the radiation that they receive from the Sun, thereby augmenting the Sun's gravitational radiation. It will be shown that both the outer planets and the terrestrial planets are all upheld in stable orbits controlled by the frequencies of the gravitational radiation emitted not only by the Sun but by Jupiter also.

Table 1 shows data for the planets, where r = mean radius of orbit around the Sun, and u = mean velocity around the Sun. Also given are the ratio's between the planets gravitational frequencies and that of Jupiter's gravitational frequency, and the resonances this creates. These resonances can be expressed as a whole number (n_j), with Jupiter being $n_j = 42$, and as a harmonic (H_j) between adjacent planets. It can be seen that only between the Asteroids and Jupiter do these simple harmonic relationships break down. Calculations are started by guessing the frequency of Jupiter and its resonances, then ν_g is calculated from Eq.7, and the shape of Fig. 1 is checked against the ancient planetary symbols, and Greek mythology [1]. Also, we can assume that the highly elliptical orbits of Mercury and Mars lie where the gradients are large, and the nearly circular orbits of Venus and Neptune lie where the gradients are slight.

The planets must also be in resonant or quantized orbits with respect to the Sun because only then can they exchange gravitational energy with the Sun without losses. The maximum frequencies of the gravitational waves emitted by the Sun are predicted by the LISA (Laser Interferometer Space Antenna) relativity research group at Cardiff University in Wales [2] to range from 0.7×10^{-4} Hz to 4×10^{-4} Hz. These quantum positions (n_s) are also shown in Table 1, and for the terrestrial planets produce the major chord 4:5:6:8. They are calculated from Eq. 6 by replacing ν_g with $\Delta\nu$ for each planet computed from Jupiter's resonances, that is: $\Delta\nu = n_s\, c / 8\, \pi^2\, r$ (8)

It can be seen that the Sun like Jupiter produces simple harmonic relationships (H_s), but only between adjacent planets well away from Jupiter. However, when Jupiter's harmonics are divided by the Sun's (H_j / H_s) we regain this simple harmonic relationship between all adjacent planets including the Asteroids.

References: [1] http://homepage.mac.com/cparada/GML/Phaethon3.html
[2] http://carina.astro.cf.ac.uk/groups/relativity/research/part7.html

Table 1. Planetary resonances with respect to Jupiter and the Sun.

Planet	r x 10^9 (m)	u x 10^3 (m/s)	ν_g (Hz)	$\Delta\nu$x10^{-4} (Hz)	$\Delta\nu_j / \Delta\nu$	n_j	H_j	n_s	H_s	H_j/H_s
Mercury	57.91	47.86	1.656	2.643	2/7	12		4.031		
							2/3		4/5	5/6
Venus	108.2	35.02	1.508	1.762	3/7	18		5.021		
							6/7		5/6	36/35
Earth	149.6	29.78	1.522	1.512	1/2	21		5.997		
							7/8		3/4	7/6
Mars	228.2	24.15	1.644	1.324	4/7	24		7.957		
							4/5		18/25	10/9
Asteroids	397	18.3	1.735	1.059	5/7	30		11.07		
							5/7		5/7	1
Jupiter	778.4	13.06	1.735	0.756	1	42		15.50		
							3/4		8/11	33/32
Saturn	1427	9.643	1.763	0.567	4/3	56		21.31		
							2/3		3/4	8/9
Uranus	2871	6.798	1.667	0.378	6/3	84		28.58		
							3/4		6/7	7/8
Neptune	4498	5.431	1.568	0.284	8/3	112		33.64		
							8/9		6/7	28/27
Pluto	5907	4.740	1.594	0.252	9/3	126		39.20		

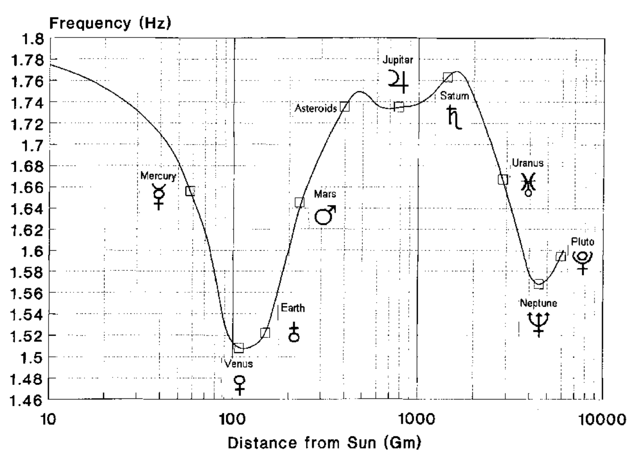

Figure 1. Pulse of the Solar System